PALEONTOLOGY.—*Report on species of corals and larger foraminifera collected in Cuba by O. E. Meinzer.*[1] THOMAS WAYLAND VAUGHAN, Scripps Institution of Oceanography, LaJolla, Calif.

PREFATORY NOTE

This paper furnishes a setting for the list of fossils published under the title, "Report on species of fossils collected in Cuba by E. O. Meinzer in November and December, 1915" by T. Wayland Vaughan,[2] as an appendix to Doctor Meinzer's article "Geologic reconnaissance of a region adjacent to Guantanamo Bay, Cuba."[3]

It is essential for its proper interpretation and was intended to precede that list. It contains an account of the nomenclature of the species involved, the characterization of a new variety, and the discussion of problems of broad regional geologic correlation.

INTRODUCTION

Descriptions of species of corals and foraminifera collected by Dr. Meinzer have appeared in several papers. The Tertiary corals were described by me (Vaughan, 1919), and those descriptions, identifications, and stratigraphic references stand except that the foraminifera from locality 7522 are Eocene, while the corals seem to be Oligocene. My identification of *Diploastrea crassolamellata* from it has been confirmed by Mr. J. W. Wells. Specimens from two horizons appear to have been mixed by the transportation of specimens from a higher to a lower horizon.

Doctor Cushman published the first account of the larger foraminifera (Cushman, 1919) and later I discussed them in two papers (Vaughan, 1924 and 1926). I have endeavored to make a careful restudy of the Cuban material. The task was a difficult one. Since the examinations were based largely on thin sections of organisms that exhibit bewildering variation. I have been led to change some of Doctor Cushman's identifications. Table 1 is taken from Cushman's work already cited.

NOMENCLATURE OF SPECIES

Except to place the species referred to "*Orthophragmina*" in the older genus *Discocyclina*, those species are not changed. The species referred to *Carpenteria* are also left as they were. *Lepidocyclina perun-*

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[2] This JOURNAL, **23**: 261–263. 1933.
[3] Idem, pp. 246–260.

TABLE 1. Distribution of Other Cuban Foraminifera According to Stations at Which Found

		3448	3473	3475	3478	3567	7512	7513	7516	7518	7519	7521	7522	7543	7548	7554	7664	7666	6117	6118	6119	6120	6122	6123	6124	6125
Orthophragmina	*cubensis* Cushman	×	..	×	..	×	..	..	..	..	..	..	..	..	..	..	..	×	×	×	×	×	×	×	×	×
	subtaramellei Cushman	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	×?	..	..	×	×	..	×	×	×
	sculpturata Cushman	..	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	crassa Cushman	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	×	×	..	×	×	×	×
	pustulata Cushman	×	..	..	×	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lepidocyclina	*crassata* Cushman	..	..	..	..	..	×	×	..	..	×	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	perundosa Cushman	..	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	subraulinii Cushman	..	..	..	×	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..
	morgani Lem. & R. Douv.	..	..	..	..	..	..	×	×	..	?	..	?	×	..	×	..	..	..	..	..	..	..	..	..	..
	schlumbergeri Lem. & R. Douv.	..	..	..	..	..	×	..	..	×	..	..	×	×	..	..	×	..	..	..	..	..	..	..	..	..
	marginata (Micht.)	..	..	..	..	..	×	?	..	×	×	×	?	×	..	..	×	..	..	..	..	..	..	..	..	..
	sumatrensis (Brady)	..	..	..	..	..	..	×	×	..	×	..	..	×	..	×	×	..	..	..	..	..	..	..	..	..
	canellei var. *yurnagunensis* Cushman	..	..	..	..	..	..	..	..	..	..	..	..	×	×	..	..	..	..	..	..	..	..	..	..	..
Carpenteria	*proteus* Cushman	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..
	americana Cushman	..	..	..	..	..	..	×	..	×	..	×	×	..	..	..	×	..	..	..	..	..	..	..	..	..

dosa and *L. subraulinii*, both Eocene species, also remain as they were, but the other identifications of *Lepidocyclina* are changed.

Lepidocyclina canellei var. *yurnagunensis* is considered a valid species and I have redescribed it as *Lepidocyclina yurnagunensis* Cushman (Vaughan, 1926). The specimens identified by Cushman as *Lepidocyclina sumatrensis* and *L. morgani* are now referred to *L. yurnagunensis*. The specimens identified as *L. morgani* have both embryonic and equatorial chambers similar to those of *L. yurnagunensis*, but differ by possessing strongly developed pillars. There is complete intergradation between the forms without and with the pillars. In order to indicate the deviation from the typical form of the species, I propose to call this variant *Lepidocyclina yurnagunensis* var. *morganopsis*, n. var. (co-types from loc. 7543). Externally the specimens resemble *L. morgani* and also *L. parvula* Cushman, but as stated above the embryonic and equatorial chambers are like those of *L. yurnagunensis*.

Lepidocyclina crassata Cushman, at least part of the specimens identified by Cushman as *L. marginata* Micht., and *L. chattahoocheensis* Cushman (Cushman, 1920), are all placed in the synonymy of *L.* (*Eulepidina*) *favosa* Cushman (Cushman, 1919, Vaughan, 1924). The names *L. crassata* and *L. favosa* were published by Cushman at the same time, but I am selecting *L. favosa* as the name of the species because specimens free from the matrix can be obtained at the type locality of *L. favosa*, and the type of *L. crassata* is embedded in rock. The amount of variation in this species is most astonishing. Fortunately I have had available hundreds of perfectly preserved specimens from a single bed at one locality, Espinal, Vera Cruz, Mexico, in addition to good representations of all forms from their respective type localities. The specimen from locality 7522 identified by Doctor Cushman as *L. crassata* does not belong to the species.

The specimens identified by Cushman from Doctor Meinzer's localities nos. 7512, 7518, and 7543 as *L. schlumbergeri* are now referred to other species. Some of the specimens represent *L. gigas* Cushman. The specimens collected by Doctor Darton at locality 7664 belong to a large species of the subgenus *Eulepidina* distinct from *L. gigas*.

Doctor Meinzer's collections of orbitoidal foraminifera from localities 7512, 7513, 7516, 7518, 7519, 7543, 7548, 7552, 7553, and 7554, are all of approximately the same horizon in the Oligocene. This horizon is represented in Antigua, Jamaica, Cayman Brac, the State of Vera Cruz in Mexico, and at other localities in the Caribbean and

Gulf of Mexico regions. The horizon of locality 7521 is doubtful. It may be Eocene.

Locality 7522. The foraminifera are definitely Eocene. It contains two or more species in common with the Eocene exposure at Nuevitas, Cuba, U.S.G.S. loc. 3478, and species represented at other Eocene localities in Cuba. The corals collected at this locality seem to have come from another, an Oligocene, horizon.

If I noticed specimens of *Globigerina* and nullipores I recorded their presence. The presence of nullipores, if they are *in situ*, indicates relatively shallow water, because they are photosynthetic organisms; while the presence of *Globigerina* indicates that pelagic organisms drifted into the locality where the other fossils were found.

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BOTANY.—*Several more fungi that prey on nematodes.*[1] CHARLES DRECHSLER, Bureau of Plant Industry.

A fungus with long, narrow, straight or somewhat curved conidia, provided with 5 to 15 septa (Fig. 16 A) and borne on erect, aerial, only slightly differentiated hyphae, usually singly (Fig. 16, A, *a*) but sometimes, following continued growth of the hypha, in small number (Fig. 16 A, *b*), was found actively destroying slender nematodes referable to a species of *Rhabditis*. The animals were snared in rather small, intramatrical, non-constricting hyphal loops (Fig. 16, B) attached singly at a noticeable swelling in one of the three component cells by a relatively delicate, often somewhat curving stalk. Often the organ of capture was torn from its attachment by the struggling nema (Fig. 16, C, *a*), which then was frequently further snared in one or two other hyphal loops before finally succumbing to extensive internal hyphal invasion (Fig. 16, C, *b*). This invasion regularly proceeded

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